Opioid System and Addiction

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The endogenous opioid system consists of widespread neurons, consisting of three opioids: Endorphins, Enkephalins, and Dynorphins, which function as neurotransmitters for three classes of receptors: mu (μ), delta (δ), and kappa (κ). Opioids function as pain-relieving system in the body by producing analgesia, euphoria and sedative effects. Continuous administration of opioids leads to physical dependence followed by addiction. Thus, Opioids result in a collection of negative side effects, such as withdrawal symptoms, driving the individual to seek the drug in order to relieve and elevate those symptoms (Koob, 2008).
Numerous studies have been conducted on mice to conclude the various effects the stimulation of the opioid systems result in their bodied and general psychiatric behavior (Achterberg, et al., 2018), including studies revolving around addiction and its related effects of self-stimulation, self-administration, and place-preference models (BALSTER, 1991). One experiment revolved around μ receptors knockout mice (Kieffer, Gavériaux-, 2002), and others had the mice injected with exogenous opioids to have a controlled observation of the resulted effects. (Becker et al., 2002;(Roy, at al., 1998)
Short-term administration of opioids produces euphoria, sedation, and a feeling of tranquility. Repeated administration induces tolerance and intense physical dependence. And an overdose or long-term administration can lead to severe impairments in health. This is especially evident in mice that lack μ receptors, because they don't exhibit the behavioral effects induced by opioids nor become physically dependent. The μ receptor is also involved in mediation or modulation of the rewarding effect of other drugs of abuse. (Becker et al., 2002) (Roy, Barke, Loh, 1998)
The obtained results have confirmed the previous suspicions regarding the opioid system. Opioids induce major effects on the psychological state of the human brain, especially in the case of using of exogenous opioids. As such, they assert analgesic, sedative and euphoric effects which will eventually lead to the drugs abuse and addictions.

Keywords: Addiction, Opioid system, Opioid receptors, Opioids, Dependence, Pain, Analgesia, Alcohol, Drugs.

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